Site COLSF 7.1 V1

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

EPA

April 29, 1992

Reply To
Attn Of: HW-113

Dean Fowler, Project Manager
Utility Division
Spokane County Public Works
N. 811 Jefferson Street
Spokane, Washington 99260-0180

Re: Colbert Landfill, Phase II Health and Safety Plan

Dear Mr. Fowler:

The U.S. Environmental Protection Agency (EPA) and the Washington Department of Ecology (Ecology) have received and reviewed the "Health and Safety Plan, Phase II Remedial Design/Remedial Action, Colbert Landfill, Spokane, Washington," dated February 28, 1992. The review has not raised any issues or problems which are inconsistent with the National Contingency Plan (NCP), Scope of Work (SOW), or Consent Decree. Neither EPA nor Ecology provides approval for health and safety plans; however, a number of comments are enclosed for your consideration.

A letter with the Ecology comments is enclosed. In addition, Ecology has included a copy of their "Drilling Safety Guide" for your use.

The Site Safety Officer and the Field Coordinator are the positions which have primary safety responsibility on-site. The plan should state that these individuals (individual) will be adequately trained and meet WISHA and OSHA minimum training requirements before site work begins. The person in charge of site safety should be available during intrusive site work.

If you have any questions regarding these comments, please do not hesitate contacting Mike Kuntz, Ecology Project Manager, at (206) 438-3079, or me at (206) 553-7177.

Sincerely,

Neil E. Thompson
Project Manager

Enclosure

cc: Kuntz, Ecology
Mackey, ORC

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

April 23, 1992

TO: Michael Kuntz

FROM: Dick Boose

SUBJECT: Review of the Health and Safety Plan (HASP) for Phase II Remedial Design/Remedial Action Colbert Landfill, Spokane, Washington, February 28, 1992, Prepared by Landau Associates, Inc.

Per your request, I have reviewed the above HASP and have the following comments:

Ecology does approve or pass on HASPs. However, review and comment shall be made with guidance from Chapters 296-62 Part P and 296-155 WAC, EPA Standard Operational Safety Guidance and current updates and advisories from ACGIH and NIOSH.

Landau Associates, as is usual for them, has prepared another well planned and well written HASP. I use them as a role model to demonstrate what a HASP should be.

My comments will reflect concern for specific issues in the HASP only:

1. Page 1, "In event of an emergency.." I wish to emphasize where serious injury may have occurred, it is a priority to assess and maintain vital functions of the victim.

2. Page 1-5, definition of 'intrusive activities", I would like to recommend that the definition should be enlarged to include 'surface work' in addition to subsurface work.

3. Will subcontractors also be involved on this project at Colbert Landfill? Landau or the prime contractor on these sites shall assume responsibility to assure subcontractors have a written Health and Safety plan at least as conservative as theirs (Landau's).

4. There is no reference in the HASP for an SOP addressing safe drill rig operation. WISHA is becoming more concerned about the safe operational use of drill rigs on Haz Mat sites and a written operational plan will often avert further inquiry during an audit. I have attached a drill rig SOP prepared by Ecology and Environment which has some good recommendations.

Landau should also review the use of other heavy equipment and complex technology in the context of having written procedures particularly where there are personnel interfacing with tasks during site operations.

5. Page 2-2, Section 2.1.1, Toxicity - I have several comments regarding the 'selected toxicity and safety criteria' statements for the six constituents of concern and the permissible exposure limits as given on Table 2.2:

   - Five of the compounds are either possible or probable human carcinogens. NIOSH has recommended that occupational exposures to *carcinogens* be limited to the lowest feasible concentration (even below PELs).

   - At least five of the above compounds are considered to be teratogens by SAX et al. Site workers of child bearing age should be informed as part of worker's right-to-know.

   - Action levels given in Section 5.1, Page 5-2 to trigger an upgrade to respiratory protection, should be reconsidered at 5 ppm or less.

6. The gain on some PID detectors can be increased and recalibrated to detect and measure methylene chloride (MC) and other chlorinated hydrocarbons. Draeger-style detector tubes or field GC can be used to verify the contaminant.

cc: Steve Robb

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

June 19, 1990

TO: Potential Users of this Drilling Safety Guide

The Department of Ecology is concerned for the safety of drilling operators and employees at hazardous waste site drilling activities. The human penalty for accidents during drilling operations is often severe if not tragic. Modern drill rigs, by their design and purpose, are heavy and complex and with their heavy use are subject to wear and stress. No two drilling operations are exactly alike.

Ecology and Environment Inc. have put together guidelines drawn from Drill Manufacturers and the National Drill Contractors Association for the safe operation of drilling equipment. The procedures presented should be viewed as recommendations and not to be considered as applicable to all situations.

The Drilling Safety Guide has been very well done, and with Ecology Environment's kind permission, I will pass this information on to drilling contractors who are working our sites and trust that it will contribute to drilling rig safety.

Dick Boose

Dick Boose, Health and Safety
Hazardous Waste Investigations
and Clean Up Program
Department of Ecology

DRILLING PROCEDURES PARTICULAR TO HAZARDOUS WASTE SITES

INTRODUCTION

The normal risks involved in drilling are compounded on hazardous waste sites, unless drilling personnel have been properly screened, trained, and equipped for such special work. The potential risks to be encountered on each individual site must be examined prior to the start of drilling so that appropriate safety procedures can be developed.

PERSONAL EQUIPMENT

All personnel that enter the drilling site should wear properly selected and fitted protective clothing as appropriate for the site conditions. Project personnel shall be trained and tested in the usage or the respiratory protection equipment, should the site safety officer deem such protection to be necessary. The non-disposable protective clothing and personnel safety equipment shall be properly cleaned and maintained prior to removal. This equipment is to remain on the site whenever the project personnel leave the project site.

Disposable protective clothing shall be discarded on the site in 55-gallon steel drums at the end of every shift or if soiled or damaged.

Direct skin contact with contaminated or potentially contaminated soils, circulated drilling fluids, drill bits, stem and casing section shall be avoided. Adequate splash protection, as determined by the site safety office, shall be worn while in proximity to the drilling rig. All drill parts coming in contact with contaminated soils or fluids are to undergo decontamination, as prescribed by the project supervisor at the completion of each borehole. Sampling devices will be cleaned and decontaminated following each sampling operation.

DRILLING SAFETY GUIDE

The Drilling Safety Guide has been prepared through the volunteer efforts of member delegations of the Diamond Core Drill Manufacturers Association (DCDMA) and the National Drilling Contractors Association (NDCA).

This guide contains suggested safety procedures. It is not intended nor does it set forth any standard industry procedures or requirements, nor does it contain any procedures or requirements mandated by law. It is to be used as a guideline for the safe operation of drilling equipment. DCDMA and NDCA and their officers and members deny any liability for any injury to persons or property which may occur even if these procedures are properly followed. Further, neither the DCDMA nor the NDCA or their officers or members accept responsibility for the completeness of the guide or the applicability of the statements or procedures to the use of all drilling machines and tools in all environments. Many aspects of drilling safety cannot be expressed in detail and cannot be met by mechanical means, but can only be accomplished with the exercise of intelligence, care, and common sense.

DRILLING SAFETY GUIDE

1. An Introduction to Drilling Safety

The organization where you work is interested in your safety, not only when you are working on or around a drill rig, but also when you are traveling to and from a drilling site, moving the drill rig and tools from location to location on a site, or providing maintenance on a drill rig or drilling tools. This safety guide is for your benefit.

Every drill crew should have a designated safety supervisor. The safety supervisor should have the authority to enforce safety on the drilling site. A rig worker's first safety responsibility is to listen to the safety directions of the safety supervisor.

2. Governmental Regulations

All local, state, and federal regulations, currently in effect or effected in the future, take precedence over the recommendations and suggestions which follow. Government regulations will vary from country to country and from state to state.

3. The Safety Supervisor

The safety supervisor should:

- Consider the "responsibility" for safety and the "authority" to enforce safety to be a matter of first importance;
- Be the leader in using proper personal safety gear and set an example in following the rules that are being enforced on others;

additional vehicle and assure that they are properly maintained;

- Be well trained, along with as many crew members as possible, and capable of using first aid kits, fire extinguishers, and all other safety devices and equipment; and
- Maintain a list of addresses and telephone numbers of emergency assistance units (ambulance services, police, hospitals, etc.), and inform other members of the drill crew of the existence and location of the list.

4. Individual Protective Equipment

For most geotechnical, mineral, and/or groundwater drilling projects, individual protective equipment should include a safety hat, safety shoes, safety glasses, and close-fitting gloves and clothing. The clothing of the individual drill rig worker is not generally considered protective equipment; however, your clothing should be close-fitting but comfortable, without loose ends, straps, drawstrings, or belts, or otherwise unfastened parts that might catch on some rotating or translating component of the drill rig. Rings and jewelry should not be worn during a work shift.

- Safety Head Gear. Safety hats (hard hats) should be worn by everyone working or visiting at or near a drilling site. All safety hats should meet the requirements of ANSI Z89.1. All safety hats should be kept clean and in good repair with the headband and crown straps properly adjusted for the individual drill rig worker or visitor.
- Safety Shoes or Boots. Safety shoes or boots should be worn by all drilling personnel and all visitors to the drill site that observe drilling operations within close proximity of the drill rig. All safety shoes or boots should meet the requirements of ANSI Z41.1.
- Gloves. All drilling personnel should wear gloves for protection against cuts and abrasions which could occur while handling wire rope or cable and from contact with sharp edges and burrs on drill rods and other drilling or sampling tools. All gloves should be close-fitting and not have large cuffs or loose ties which can catch on rotating or translating components of the drill rig.

- Do not store gasoline in any portable container other than a non-sparking, red container with flame arrester in the fill spout and having the word "gasoline" easily visible.

6. Maintenance Safety

Good maintenance will make drilling operations safer. Also, maintenance should be performed safely.

- Wear safety glasses when performing maintenance on a drill rig or on drilling tools.
- Shut down the drill rig engine to make repairs or adjustments to a drill rig or to lubricate fittings (except repairs or adjustments that can only be made with the engine running). Take precautions to prevent accidental starting of an engine during maintenance by removing or tagging the ignition key.
- Always block the wheels or lower the leveling jacks, or both, and set hand brakes before working under a drill rig.
- When possible and appropriate, release all pressure on the hydraulic systems, the drilling fluid system, and the air pressure systems of the drill rig prior to performing maintenance. In other words, reduce the drill rig and operating systems to a "zero energy state" before performing maintenance. Use extreme caution when opening drain plugs and radiator caps and other pressurized plugs and caps.
- Do not touch an engine or the exhaust system of an engine following its operation until the engine or exhaust system has had adequate time to cool.
- Never weld or cut on or near a fuel tank.
- Do not use gasoline or other volatile or flammable liquids as a cleaning agent on or around a drill rig.
- Follow the manufacturer's recommendations for applying the proper quantity and quality of lubricants, hydraulic oils, and/or coolants.
- Replace all caps, filler plugs, protective guards or panels, high pressure hose clamps, and chains or cables that have been removed for maintenance before returning the drill rig to service.

be smashed between the wrench handle and the ground or the platform should the wrench slip or joint suddenly let go.

8. Clearing the Work Area

Prior to drilling, adequate site clearing and leveling should be performed to accommodate the drill rig and supplies and provide a safe working area. Drilling should not be commenced when tree limbs, unstable ground, or site obstructions cause unsafe tool handling conditions.

9. Start Up

All drill rig personnel and visitors should be instructed to "stand clear" of the drill rig immediately prior to and during starting of an engine.

Start all engines in accordance with the manufacturer's manual. Make sure all gear boxes are in neutral, all hoist levers are disengaged, all hydraulic levers are in the correct nonactuating positions, and the cathead rope is not on the cathead before starting a drill rig engine.

10. Safety During Drilling Operations

Safety requires the attention and cooperation of every worker and site visitor.

- Do not drive the drill rig from hole to hole with the mast (derrick) in the raised position.
- Before raising the mast (derrick), look up to check for overhead obstructions. (Refer to Section 11 on Overhead and Buried Utilities.)
- Before raising the mast (derrick), all drill rig personnel (with exception of the operator) and visitors should be cleared from the areas immediately to the rear and the sides of the mast. All drill rig personnel and visitors should be informed that the mast is being raised prior to raising it.

An elevated derrick platform should be used with the following precautions:

- When climbing the mast (derrick) or working on a derrick platform, use a safety belt or a lifeline. The safety belt should be at least four inches (100 mm) wide and should fit snugly, but comfortably. The lifeline, when attached to the derrick, should be less than eight feet (2.5 m) long. The safety belt and lifeline should be strong enough to withstand the dynamic force of a 250 pound (115 kg) weight (contained within the belt) falling eight feet (2.5 m).

- When a rig worker is on a derrick platform, the lifeline should be fastened to the derrick just above the derrick platform and to a structural member that is not attached to the platform or to other lines or cables supporting the platform.

- When a rig worker first arrives at a derrick platform, the platform should immediately be inspected for broken members, loose connections, and loose tools or other loose materials.

- Tools should be securely attached to the platform with safety lines. Do not attach a tool to a line attached to your wrist or any other part of your body.

- When you are working on a derrick platform, do not guide drill rods or pipe into racks or other supports by taking hold of a moving hoist line or a traveling block.

- Loose tools and similar items should not be left on the derrick platform or on structural members of the derrick.

- A derrick platform over four feet (1.2 m) above ground surface should have toe boards and safety railings that are in good condition.

- Workers on the ground or the drilling floor should avoid being under rig workers on elevated platforms, whenever possible.

Be careful when lifting heavy objects:

- Before lifting any object without using a hoist, make sure that the load is within your personal lifting capacity. If it is too heavy, ask for assistance.

- Before lifting a relatively heavy object, approach the object by bending at the knees, keeping your back vertical

- In order to avoid contact with power lines, only move the drill rig with the mast (derrick) down.

- If there are any questions whatever concerning the safety of drilling sites in the vicinity of overhead power lines, call the power company. The power company will provide expert advice at the drilling site as a public service and at no cost.

Underground electricity is as dangerous as overhead electricity. Be aware and always suspect the existence of underground utilities such as electrical power, gas, petroleum, telephone, sewer, and water. Ask for assistance.

- If a sign warning of underground utilities is located on a site boundary, do not assume that underground utilities are located on or near the boundary or property line under the sign--call the utility and check it out. The underground utilities may be a considerable distance away from the warning sign.

- Always contact the owners of utility lines or the nearest underground utility location service before drilling. Determine jointly with utility personnel the precise location of underground utility lines, mark and flag the locations, and determine jointly with utility personnel what specific precautions must be taken to assure safety.

12. Safe Use of Electricity

Drilling projects sometimes require around-the-clock operations and, therefore, require temporary electrical lighting. In general, all wiring and fixtures used to provide electricity for drilling operations should be installed by qualified personnel in accordance with the National Electrical Code (NFPA 70-1971) with consideration of the American Petroleum Institute's recommended practices for electrical installations for production facilities (API-RP-500B). Lights should be installed and positioned to assure that the work area and operating positions are well lit without shadows or blind spots. The following specific recommendations emphasize the safe use of electricity during landbased drilling operations.

- Electrical equipment should only be operated by trained, designated personnel.

- If you are not qualified to work on electrical devices or on electric lines, do not go near them.

13. React to Contact With Electricity

If a drill makes contact with electrical wires, it may or may not be insulated from the ground by the tires of the carrier. Under either circumstance, the human body, if it simultaneously comes in contact with the drill rig and the ground, will provide a conductor of the electricity to the ground. Death or serious injury can be the result. If a drill rig or a drill rig carrier makes contact with overhead or underground electrical lines:

- Under most circumstances, the operator and other personnel on the seat of the vehicle should remain seated and not leave the vehicle. Do not move or touch any part, particulary a metallic part, of the vehicle or the drill rig;

- If it is determined that the drill rig should be vacated, then all personnel should jump clear and as far as possible from the drill. Do not step off--jump off; and do not hang on to the vehicle or any part of the drill when jumping clear;

- If you are on the ground, stay away from the vehicle and the drill rig, do not let others get near the vehicle and the drill rig, and seek assistance from local emergency personnel, such as the police or fire department;

- When an individual is injured and in contact with the drill rig or with power lines, attempt rescue with extreme caution. If a rescue is attempted, use a long, dry, unpainted piece of wood or a long, dry, clean rope. Keep as far away from the victim as possible and do not touch the victim until the victim is completely clear of the drill rig or electrical lines; and

- When the victim is completely clear of the electrical source and is unconscious and a heart beat (pulse) cannot be detected, begin cardiopulmonary resuscitation (CPR) immediately.

the sheave is grooved, it will severely pinch and damage larger sized wire ropes.

The following procedures and precautions must be understood and implemented for safe use of wire ropes and rigging hardware.

- Use tool handling hoists only for vertical lifting of tools (except when angle hole drilling). Do not use tool handling hoists to pull on objects away from the drill rig; however, drills may be moved using the main hoist if the wire rope is spooled through proper sheaves according to the manufacturer's recommendations.
- When stuck tools or similar loads cannot be raised with a hoist, disconnect the hoist line and connect the stuck tools directly to the feed mechanism of the drill. Do not use hydraulic leveling jacks for added pull to the hoist line of the feed mechanism of the drill.
- When attempting to pull out a mired-down vehicle or drill rig carrier, only use a winch on the front or rear of the vehicle and stay as far as possible away from the wire rope. Do not attempt to use tool hoists to pull out a mired-down vehicle or drill rig carrier.
- Minimize shock loading of a wire rope--apply loads smoothly and steadily.
- Avoid sudden loading in cold weather.
- Never use frozen ropes.
- Protect wire rope from sharp corners or edges.
- Replace faulty guides and rollers.
- Replace worn sheaves or worn sheave bearings.
- Replace damaged safety latches on safety hooks before using.
- Know the safe working load of the equipment and tackle being used. Never exceed this limit.
- Clutches and brakes of hoists should be periodically inspected and tested.
- Know, and do not exceed, the rated capacity of hooks, rings, links, swivels, shackles, and other lifting aids.
- Always wear gloves when handling wire rope.

break, stay clear of the drill rig until the operator cautiously returns to turn off the drill rig engine and appropriate action is taken to release the tools. The operator should keep careful watch on the suspended tools and should quickly back away after turning off the engine.

- The rope should always be protected from contact with all chemicals. Chemicals can cause deterioration of the rope that may not be visibly detectable.

- Never wrap the rope from the cathead (or any other rope, wire rope, or cable on the drill rig) around a hand, wrist, arm, foot, ankle, leg, or any other part of your body.

- Always maintain a minimum of 18 inches of clearance between the operating hand and the cathead drum when driving samplers, casing, or other tools with the cathead and rope method. Be aware that the rope advances toward the cathead with each hammer blow as the sampler or other drilling tool advances into the ground.

- Never operate a cathead (or perform any other task around the drill rig) with loose, unbuttoned, or otherwise unfastened clothing or when wearing gloves with large cuffs or loose straps or lacings.

- Do not use a rope that is any longer than necessary. A rope that is too long can form a ground loop or otherwise become entangled with the operator's legs.

- Do not use more rope wraps than are required to hoist a load.

- Do not leave a cathead unattended with the rope wrapped on the drum.

- Position all other hoist lines to prevent contact with the operating cathead rope.

- When using the cathead and rope for driving or back-driving, make sure that all threaded connections are tight and stay as far away as possible from the hammer impact point.

- The cathead operator must be able to operate the cathead standing on a level surface with good, firm footing conditions without distraction or disturbance.

section in the ground or other hard surfaces such as the drill rig platform.

- o Never allow feet to get under the auger section that is being hoisted.
- o When rotating augers, stay clear of the rotating auger and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason whatever.
- o Use a long-handled shovel to move auger cuttings away from the auger. Never use hands or feet to move cuttings away from the auger.
- o Do not use hands to remove earth from rotating augers when removing augers from the ground.

17. Safety During Rotary and Core Drilling

Rotary drilling tools should be safety checked prior to drilling.

- o Water swivels and hoisting plugs should be lubricated and checked for "frozen" bearings before use.
- o Drill rod chuck jaws should be checked periodically and replaced when necessary.
- o The capacities of hoists and sheaves should be checked against the anticipated weight of the drill rod string plus other expected hoisting loads.

The following special precautions should be taken for safe rotary or core drilling which involves chucking, joint break, hoisting, and lowering of drill rods.

- o Only the operator of the drill rig should brake or set a manual chuck so that rotation of the chuck will not occur prior to removing the wrench from the chuck.
- o Drill rods should not be braked during lowering into the hole with drill rod chuck jaws.
- o Drill rods should not be held or lowered in the hole with pipe wrenches.
- o If a string of drill rods are accidentally or inadvertently released into the hole, do not attempt to grab the falling rods with your hands or a wrench.

- Never travel on a street, road, or highway with the mast (derrick) of the drill rig in the raised or partially raised position; and

- Remove all ignition keys when a drill rig is left unattended.

19. Loading and Unloading

When loading or unloading a drill rig on a trailer or a truck:

- Use ramps of adequate design that are solid and substantial enough to bear the weight of the drill rig with carrier--including tooling;

- Load and unload on level ground:

- Use the assistance of someone on the ground as a guide:

- Check the brakes on the drill rig carrier before approaching loading ramps;

- Distribute the weight of the drill rig, carrier, and tools on the trailer so that the center of weight is approximately on the centerline of the trailer and so that some of the trailer load is transferred to the hitch of the pulling vehicle. Refer to the trailer manufacturer's weight distribution recommendations; and

- The drill rig and tools should be secured to the hauling vehicle with ties, chains, and/or load binders of adequate capacity.

20. Off-Road Movement

The following safety suggestions relate to off-road movement.

- Before moving a drill rig, first walk the route of travel, inspecting for depressions, stumps, gullies, ruts,and similar obstacles.

- Always check the brakes of the drill rig carrier before traveling, particularly on rough, uneven, or hilly ground.

- Check the complete drive train of a carrier at least weekly for loose or damaged bolts, nuts, studs, shafts, and mounting.

- Abnormal or uneven wear and cuts, breaks, or tears in the casing.

The repair of truck and off-highway tires should only be made with required special tools and following the recommendations of a tire manufacturer's repair manual.

Batteries contain strong acid. Use extreme caution when servicing batteries.

- Batteries should only be serviced in a ventilated area while wearing safety glasses.
- When a battery is removed from a vehicle or service unit, disconnect the battery ground clamp first.
- When installing a battery, connect the battery ground clamp last.
- When charging a battery with a battery charger, turn off the power source to the battery before either connecting or disconnecting charger leads to the battery posts. Cell caps should be loosened prior to charging to permit the escape of gas.
- Spilled battery acid can burn your skin and damage your eyes. Spilled battery acid should be immediately flushed off your skin with lots of water. Should battery acid get into someone's eyes, flush immediately with large amounts of water and see a medical physician at once.
- To avoid battery explosions, keep the cells filled with electrolyte, use a flashlight (not an open flame) to check electrolyte levels and avoid creating sparks around the battery by shorting across a battery terminal. Keep lighted smoking materials and flames away from batteries.

Special precautions must be taken for handling fuel and refueling the drill rig or carrier.

- Only use the type and quality of fuel recommended by the engine manufacturer.
- Refuel in a well-ventilated area.
- Do not fill fuel tanks while the engine is running. Turn off all electrical switches.

23. Drill Rig Utilization

Do not attempt to exceed manufacturers' ratings of speed, force, torque, pressure, flow, etc. Only use the drill rig and tools for the purposes which they are intended and designed.

24. Drill Rig Alterations

Alterations to a drill rig or drilling tools should only be made by qualified personnel and only after consultation with the manufacturer.